UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

Office of Prevention, Pesticides and Toxic Substances

June 6, 2002

MEMORANDUM

SUBJECT: **Lindane**; Chemical No. 009001. Assessment of Risks from Use of Thiamethoxam and Imidacloprid as Alternatives to Lindane for Seed Treatment of Corn

DP Barcode: D283450; Submission No. S605841
Reregistration Case #: 0315

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Per SRRD's request, this provides HED's assessment of risks from use of thiamethoxam and imidacloprid as on farm seed treatment alternatives to lindane.

Thiamethoxam

HED evaluated both cancer and non-cancer risks associated with use of thiamethoxam as an on farm seed treatment. The assessment uses unit exposure derived from a study of worker exposure to lindane during manual treatment of winter wheat (Fenske, MRID 44405802). Data on application rates for corn was provided by BEAD (D. Brassard, 2/5/02) The assessment incorporates both high and low-end assumptions regarding acres planted/day (100-200 A/day). Toxicological endpoints are taken from HED's Human Health Risk Assessment for the Use of Thiamethoxam as a Seed Treatment (D265929, 9/1/00). The analysis indicates MOEs of concern (MOE<100) via the dermal exposure route from both high and low-end on farm treatment scenarios. All inhalation exposure scenarios result in MOEs that are not of concern. Cancer risks are not of concern for either dermal or inhalation exposure pathways.

Daily Exposures and MOEs for Workers Exposed to Thiamethoxam During On Farm Seed Treatment of Corn

Crop	Seed Handled (lb/day) [a]	Application Rate (lb ai/100 lb seed)	ai handled (lb/day)	Unit Exposure (mg/lb ai) [b]		Daily Exposure (mg/kg/day)		Short Term MOE		Cancer Risk[g]	
				dermal	inhalation	dermal [c]	inhalation [e]	dermal [d]	inhalation[f]	dermal	inhalation
Corn	3000	0.05	1.56	9.4	0.0016	0.21	3.6E-05	11	17000	8.0E-06	5.1E-09
	1500	0.05	0.78	9.4	0.0016	0.10	1.8E-05	22	34000	4.0E-06	2.5E-09

a 15 lb seed/acre, planting 200 acres/day - high-end; 15 lb seed/acre, planting 100 acres/day - low-end
b Median unit dermal and inhalation unit exposures from Fenske Study
c Daily Dermal Exposure (mg/kg/day) = unit exposure (mg/lb ai) x amount handled per day (lbs a.i.) / bw (70 kg).
d Dermal MOE = Oral NOAEL (0.6 mg/kg) / [daily exposure (mg/kg/day) x dermal absorption factor (27%)].
e Daily Inhalation Exposure (mg/kg/day) = inhalation unit exposure (mg/lb ai) x amount handled per day (lbs a.i.) / body weight (70 kg).
f Inhalation MOE = NOAEL (0.6 mg/kg/day) / daily exposure (mg/kg/day).
g Cancer Risk = Lifetime ADD x Q_1^* (0.0377 mg/kg/day)
Dermal Lifetime ADD = (daily dermal exposure x dermal absorption factor) x 2 annual treatments day/365 days x 50 years/70 year lifetime
Inhalation Lifetime ADD = daily inhalation exposure x 2 annual treatments day/365 days x 50 years/70 year lifetime

Imidacloprid

Based on HED's most recently conducted FQPA Risk Assessment of Imidacloprid on Grain Sorghum Following Seed Treatment, imidacloprid is not an inhalation or dermal toxicant. It has been classified as a Group E chemical, no evidence of carcinogenicity in humans, by HED's RfD/Peer Review Committee on 11/10/93. Therefore, occupational and residential risk assessments are not required as no short-, intermediate-, or long-term dermal or inhalation toxicity endpoints were identified by the HAZ-ID SARC (9/11/97; reaffirmed 10/16/97). (D233787, 10/24/97).